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EXAMINER

MURPHY, RHONDA L

ART UNIT

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

**Application No.**

09/893,441

**Applicant(s)**

BERNHEIM ET AL.

**Examiner**

Rhonda Murphy

**Art Unit**

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 06 August 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-62 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-36, 38-49, 51-54 and 59-62 is/are rejected.
- 7) ☒ Claim(s) 37, 50 and 55-58 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 June 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Response to Amendment***

1. This communication is responsive to the amendment filed on 8/6/07. Accordingly, claims 1-62 are currently pending in this application.

### ***Response to Arguments***

1. Applicant's arguments filed 8/6/07 have been fully considered but they are not persuasive. Applicant argues the limitations for a standby antenna providing a redundant communication link between a remote communication link interface at the node and a remote communication link interface at the hub are not disclosed. However, Examiner respectfully disagrees. Sinha teaches a redundant communication link (col. 8, lines 9-11, via one or more standby antennas) established between the remote communication link interface (the standby antenna includes a redundant communication link interface) at the node and the redundant communication link interface at the hub (Fig. 3, col. 7, lines 65-67; col. 8, lines 1-11, between the users and base station 300). In regard to the claimed modem, Zendle discloses in Fig. 6B, the interfaces (antennas 602, 603 and 60n) each connected to a Hub IDU. Since it is well known in the art for Hub IDUs to include a modem, it would have been obvious to one skilled in the art to include a modem for each primary communication link interface, for the purpose of processing data transmitted via the communication link interfaces. The combined teaching of Zendle and Sinha teach a redundant communication link interface. Zendle and Sinha fail to explicitly disclose a redundant communication link interface including a

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redundant modem distinct from said plural modems. However, Lampe teaches a redundant communication link interface including a redundant modem distinct from said plural modems (Fig. 2; secondary modem pool 154; page 3, paragraph 19). It would have been obvious to one skilled in the art to include a redundant modem distinct from plural modems, so as to provide a redundant modem usable as a standby modem to support the transfer of communication data when the plural modems are unavailable. Therefore, Examiner believes all claim limitations have been met and the rejection has been maintained.

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1 – 3, 8-10, 21-28, 30, 38-41, 43, and 59-62 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zendle (US 6,865,170) in view of Sinha et al. (US 6,94,188) and Lampe et al. (US 2002/0114346 A1).

**Regarding claim 1**, Zendle teaches a point to multipoint communication system for providing broadband wireless communication between a first computer network (Fig. 7; PSTN) and one or more other computer networks (CPE; col. 10, lines 5-9 and 42-43) comprising:

a hub (Hub 704-n) comprising: an interface to the first computer network (illustrated by links connecting hub 704-n to local telephony service node to the PSTN); a plurality of primary communication link interfaces (Fig. 6A, antennas 602, 603 and 604; col. 7, lines 5-9);

and a plurality of nodes (subscribers 716) geographically spaced apart from the hub (refer to Fig. 7), each one of said nodes comprising: an interface to at least one of the other computer networks (col. 10, lines 5-9 and 42-43; subscriber 716 contain indoor units 806, which interface with CPE 810); and a remote communication link interface (col. 7, lines 5-9; col. 9, lines 35-39; a remote communication link interface must be present in order to communicate with the hub);

whereby, for each node, at least one primary communication link is established between the remote communication link interface at the node and at least one of the plurality of primary communication link interfaces at the hub (col. 7, lines 5-9).

Zendle fails to explicitly disclose a redundant communication link between the remote communication link interfaces of the hub and each node.

However, Sinha teaches a redundant communication link (col. 8, lines 9-11, via one or more standby antennas) established between the remote communication link interface (the standby antenna includes a redundant communication link interface) at the node and the redundant communication link interface at the hub (Fig. 3, col. 7, lines 65-67; col. 8, lines 1-11, between the users and base station 300).

In view of this, it would have been obvious to one skilled in the art to modify Zendle's system by including a redundant communication link between the hub and node, in order to provide redundant means of communication for supporting traffic.

Zendle fails to explicitly disclose a plurality of primary communication link interfaces each including a modem.

However, as illustrated in Fig. 6B, the interfaces (antennas 602, 603 and 60n) are each connected to a Hub IDU and it is well known in the art for Hub IDUs to include a modem.

Therefore, it would have been obvious to one skilled in the art to include a modem for each primary communication link interface, for the purpose of processing data transmitted via the communication link interfaces.

The combined teaching of Zendle and Sinha teach a redundant communication link interface. Zendle and Sinha fail to explicitly disclose a redundant communication link interface including a redundant modem distinct from said plural modems.

However, Lampe teaches a redundant communication link interface including a redundant modem distinct from said plural modems (Fig. 2; secondary modem pool 154; page 3, paragraph 19).

In view of this, it would have been obvious to one skilled in the art to include a redundant modem distinct from plural modems, so as to provide a redundant modem usable as a standby modem to support the transfer of communication data when the plural modems are unavailable.

**Regarding claim 2**, Zendle teaches a second hub (704-5) comprising: an interface to a second computer network (Fig. 7, world wide web) different from the first computer network and the one or more other computer networks; a second plurality of primary communication link interfaces (Fig. 6, antennas 602, 603 and 604; col. 7, lines 5-9); and a second plurality of nodes (subscribers 716) geographically spaced apart from either the second hub (refer to Fig. 7), each one of said second plurality of nodes comprising: an interface to a computer network other than the first or second computer network or said one or more other computer networks (col. 10, lines 5-9 and 42-43; subscriber 716 contain indoor units 806, which interface with CPE 810); and a remote communication link interface (col. 7, lines 5-9; col. 9, lines 35-39; a remote communication link interface must be present in order to communicate with the hub); whereby, for each of said second plurality of nodes, at least one primary communication link is established between the remote communication link interface at the node and at least one of the plurality of primary communication link interfaces at the second hub (col. 7, lines 5-9).

Zendle fails to explicitly disclose a second redundant communication link between the remote communication link interfaces of the hub and each node.

However, Sinha teaches a second redundant communication link (col. 8, lines 9-11, via one or more standby antennas) established between the remote communication link interface (the standby antenna includes a redundant communication link interface) at the node and the redundant communication link interface at the second hub (Fig. 3, col. 7, lines 65-67; col. 8, lines 1-11, between the users and base station 300).

In view of this, it would have been obvious to one skilled in the art to modify Zendle's system by including a second redundant communication link between the hub and node, in order to provide redundant means of communication for supporting traffic.

**Regarding claim 3**, Zendle teaches a broadband wireless communication system comprising bursty data (col. 1, lines 11-18; col. 8, lines 53-55).

**Regarding claim 8**, Zendle teaches at least one of the primary communication link interfaces provides a substantially independent primary communication link to each of at least two nodes (col. 7, lines 5-9).

**Regarding claim 9**, the combined system of Zendle and Sinha teach a redundant communication link, but fails to explicitly disclose the communication capacity of the redundant communication link interface as substantially the same as the communication capacity of one of said plurality of primary communication link interfaces. However, it would be obvious for the redundant link communication capacity to be substantially the same as that of the primary communication link interface, since the redundant link is provided as back-up to support the same data originally transmitted in the primary communication link.

**Regarding claims 10, 28 and 41**, Zendle teaches each of the plurality of primary communication link interfaces operatively connected to a first communication processor (col. 6, lines 42-44; hub indoor units 622 contain communication processors).

**Regarding claims 21 and 59**, Zendle teaches a communication system wherein at least one of said first computer network or of said one or more other computer networks is a public switched telephone network (Fig. 7, PSTN).



**Regarding claims 22 and 60**, Zendle teaches a communication system wherein at least one of said first computer network or of said one or more other computer networks is a public switched telephone network, but fails to explicitly disclose a private branch exchange (PBX). It would have been obvious to one skilled in the art to include a PBX for the purpose of communicating with a private owned business.

**Regarding claims 23 and 61**, Zendle teaches a communication system wherein at least one of said first computer network or of said one or more other computer networks is a router (Fig. 7, service node 708).

**Regarding claims 24 and 62**, Zendle teaches a communication system wherein at least one of said first computer network or of said one or more other computer networks is the Internet (Fig. 7, Internet service node).

**Regarding claims 25 and 38**, the combined method of Zendle and Sinha teach the same limitations described above in the rejection of claim 1. Furthermore, Sinha teaches a plurality of redundant communication link interfaces (col. 8, lines 9-11, via one or more standby antennas) and establishing, for each node, at least one redundant communication link between the remote communication link interface at the node and at least one of the plurality of redundant communication link interfaces at the hub (Fig. 3, col. 7, lines 65-67; col. 8, lines 1-11, between the users and base station 300).

**Regarding claims 26 and 39**, the combined method of Zendle and Sinha teach primary communication link interfaces as described in the rejection of claims 25 and 38. Sinha further teaches at least one directional antenna for each sector and at least one standby antenna for each sector. Therefore, indicating the number of primary communication

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link interfaces equaling the number of redundant communication link interfaces (col. 8, lines 9-11).

**Regarding claims 27 and 40**, Zendle teaches each of said plurality of primary communication link interfaces operatively connected to a unique one of a plurality of communication processors (Fig. 6B; antennas 602-60n and communication processors located within hub indoor units 622).

**Regarding claims 30 and 43**, the combined method of Zendle and Sinha teach primary communication link interfaces as described in the rejection of claims 25 and 38. Sinha further teaches a greater number of primary communication link interfaces than the number of redundant communication link interfaces (col. 8, lines 9-11, one or more standby antennas).

3. Claims 4 – 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zendle, Sinha and Lampe as applied to claim 1 above, and further in view of Stanwood et al. (US 6,731,946).

**Regarding claim 4**, Zendle teaches primary communication links operating in the millimeter frequency range (col. 1, lines 12-15). Zendle fails to explicitly disclose at least one of the primary communication links as adaptive time division duplexed.

However, Stanwood teaches communication links operating in the millimeter frequency range (col. 10, lines 4-6) and adaptively time division duplexed (col. 29, lines 12-16).

In view of this, it would have been obvious to one skilled in the art to modify Zendle's system by incorporating adaptive time division duplexed communication links, for the purpose of adjusting the time slots allocated to uplink and downlink times to provide the most efficient transfer of user data from the user to the base station.

**Regarding claim 5**, Zendle teaches the system described above in the rejection of claim 4, but fails to explicitly disclose adaptive time division duplexing as dynamically adjustable as a function of the forward and reverse data traffic on the primary communication link.

However, Stanwood teaches adaptive time division duplexing as dynamically adjustable as a function of the forward and reverse data traffic on the primary communication link (col. 29, lines 12-16).

In view of this, it would have been obvious to one skilled in the art to modify Zendle's system by incorporating a dynamically adjustable adaptive time division duplexed system, for the purpose of adjusting the time slots allocated to uplink and downlink times to provide the most efficient transfer of user data from the user to the base station.

**Regarding claim 6**, the combined system of Zendle and Sinha teach redundant communication links and Zendle further teaches communication links operating in the millimeter frequency range.

The combined system of Zendle and Sinha fail to teach said redundant communication link as adaptive time division duplexed.

However, Stanwood teaches communication links adaptively time division duplexed (col. 29, lines 12-16).

In view of this, it would have been obvious to one skilled in the art to modify Zendle and Sinha's system by incorporating redundant adaptive time division duplexed communication links, for providing back-up communication links that adjust the time slots allocated to uplink and downlink times to provide the most efficient transfer of user data from the user to the base station.

**Regarding claim 7**, Zendle teaches the system described above in the rejection of claim 6, but fails to explicitly disclose adaptive time division duplexing as dynamically adjustable as a function of the forward and reverse data traffic on the redundant communication link.

However, Stanwood teaches adaptive time division duplexing as dynamically adjustable as a function of the forward and reverse data traffic on the primary communication link (col. 29, lines 12-16).

In view of this, it would have been obvious to one skilled in the art to modify Zendle's system by incorporating a dynamically adjustable adaptive time division duplexed system, for the purpose of adjusting the time slots allocated to uplink and downlink times to provide the most efficient transfer of user data from the user to the base station.

4. Claims 11 – 20, 29, 31-36, 42, 44-49, 51-54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zendle, Sinha and Lampe as applied to claim 10 above, and further in view of Carney (US 6,011,785).

**Regarding claims 11, 29 and 42**, the combined system of Zendle and Sinha teach redundant communication link interfaces and communication processors. Zendle and Sinha fail to explicitly disclose the redundant communication link interface operatively connected to a second communication processor.

However, Carney teaches redundant communication link interface operatively connected to a second communication processor (Fig. 1, DSPs 18, col. 3, lines 57-59).

In view of this, it would have been obvious to one skilled in the art to modify Zendle and Sinha's system by including a redundant communication link interface operatively connected to a second communication processor, in order to support additional channels as traffic increases.

**Regarding claims 12, 31 and 44**, the combined system of Zendle and Sinha teach redundant communication link interfaces and communication processors. Zendle further teaches a plurality of primary communication link interfaces each associated with a primary sector of a service area (col. 7, lines 3-9). Zendle fails to explicitly teach a redundant communication link interface associated with a redundant sector of said service area.

However, Sinha teaches a redundant communication link interface associated with a redundant sector of said service area (col. 8, lines 4-11).

In view of this, it would have been obvious to one skilled in the art to modify Zendle's system by including a redundant communication link interface associated with a redundant sector, in order to provide redundant means of communication for supporting traffic.

**Regarding claim 13**, Sinha teaches a redundant sector substantially coextensive with one or more of said primary sectors (col. 8, lines 4-11).

**Regarding claim 14**, the combined system of Zendle and Sinha teach redundant communication link interfaces and communication processors. Zendle further teaches each of said plurality of primary communication link interfaces as a radio module (Fig. 6, antennas 602, 603 and 604). Zendle fails to explicitly disclose a redundant communication link interface as a radio module.

However, Sinha teaches a redundant communication link interface as a radio module (col. 8, lines 9-11; standby antennas).

In view of this, it would have been obvious to one skilled in the art to modify Zendle's system by including a radio module as a redundant communication link interface, in order to wirelessly provide redundant means of communication for supporting traffic.

**Regarding claim 15**, the combined system of Zendle, Sinha and Carney teach communication link interfaces as radio modules. Examiner takes official notice that it is well known in the art for radio modules to be adapted to facilitate rapid field replacement, for the purpose of modifying a system to support the change in communication capacity.

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**Regarding claim 16**, the combined system of Zendle, Sinha and Carney teach the same limitations described above in claim 11. Furthermore, Sinha further teaches a second redundant communication link interface (col. 8, lines 9-11; one or more standby antennas).

**Regarding claim 17**, the combined system of Zendle, Sinha and Carney teach redundant communication link interfaces. Sinha further teaches a second redundant communication link interface establishes a redundant communication link with a node other than a node of said plurality of nodes (col. 8, lines 9-11).

**Regarding claim 18**, the combined system of Zendle, Sinha and Carney teach communication processors. Carney further teaches a first communication processor is a first modem and said second communication processor is a second modem (Fig. 1, DSPs as modulators and demodulators).

**Regarding claim 19**, Examiner takes official notice that it is well known in the art for modems to be multiport modems. It would have been obvious to one skilled in the art to include multiport modems for the purpose of supporting multiple channels.

**Regarding claim 20**, Examiner takes official notice that it is well known in the art for modems to be capable of transmitting and receiving said data at multiple levels of information density. It would have been obvious to one skilled in the art to realize modems are capable of transmitting and receiving data at multiple levels of information density, for the purpose of providing data rates that optimizes bandwidth usage.

**Regarding claims 32, 33, 34, 45, 46 and 47**, the combined method of Zendle, Sinha and Carney teach primary and redundant sectors. Zendle further teaches cell sectors

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ranging in sector width from 15 to 90 degrees (col. 7, lines 3-4). Therefore, it would have been obvious to one skilled in the art to include primary and redundant sectors of 30, 45, 60 or 90 degrees in azimuth, in order for the antennas to transmit within a particular range in the cell sector.

**Regarding claims 35 and 48**, Zendle teaches each of the plurality of primary communication links operates on a channel unique from the channels on which the other primary communication links operate (col. 6, lines 21-22).

**Regarding claims 36 and 49**, Examiner takes official notice that it would have been obvious for each of the plurality of redundant communication links operates on a channel unique from the channels on which the primary communication links operate since multiple channels are assigned to cell sectors.

**Regarding claim 51**, Zendle teaches establishing communications over at least one of the plurality of primary communication links between the hub and one or more nodes of said plurality of nodes (col. 7, lines 5-9). Zendle fails to explicitly disclose determining an undesirable link condition for the primary communication link serving one node of said plurality of nodes; and establishing communications over the redundant communication link serving said one node.

However, Sinha teaches standby antennas. It would have been obvious to one skilled in the art to determine an undesirable link condition for the primary communication link serving one node of said plurality of nodes; and establishing communications over the redundant communication link serving said one node, for the purpose of providing redundant means of communication for supporting traffic.



**Regarding claim 52**, in addition to the teachings described above in the rejection of claim 51, Examiner takes official notice that at least one of the following steps are well known in the art for determining an undesirable link condition: (a) detecting the loss of communications for a predetermined amount of time; (b) detecting a bit error rate greater than a predetermined threshold; (c) detecting a signal attribute outside a predetermined range; (d) detecting a signal to noise ratio less than a predetermined threshold; or (e) detecting a carrier to noise ratio less than a predetermined threshold.

It would have been obvious to one skilled in the art to include at least one of the above steps for determining undesirable link condition, for the purpose of receiving an indication that a channel is incapable of effectively transmitting data.

**Regarding claim 53**, Zendle further teaches each of the plurality of primary communication links operates on a channel unique from the channels on which the other primary communication links operate (col. 6, lines 19-29).

**Regarding claim 54**, Examiner takes official notice that it would have been obvious for each of the plurality of redundant communication links to be capable of operating on one of a first plurality of channels unique from the channels on which the primary communication links operate, since multiple channels are assigned to cell sectors.

#### ***Allowable Subject Matter***

5. Claims 37, 50 and 55-58 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Conclusion***

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rhonda Murphy whose telephone number is (571) 272-3185. The examiner can normally be reached on Monday - Friday 9:00 - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu can be reached on (571) 272-3155. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Rhonda Murphy  
Examiner  
Art Unit 2616

RM

A handwritten signature in black ink, appearing to read 'Huy D. Vu', with a long horizontal flourish extending to the right.

HUY D. VU  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600